

NASA TECH BRIEF



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Tool Samples Subsurface Soil Free of Surface Contaminants

The problem:

In the sampling of soils for microbiological and chemical analysis it is often desirable to obtain pure subsurface soil that is free of any foreign substance that may exist on the surface. Previous sampling methods have collected surface as well as subsurface material because surface material has been carried to the subsurface collection site by the collection device.

The solution:

A sampling device that can be introduced through a contaminated surface area in closed condition, opened, and a subsurface sample collected, sealed while in the subsurface position, and then withdrawn.

How it's done:

The device has an outer stainless steel housing fitted with a conical cutting tip and an aluminum inner sample collection tube that can be rotated one third of a turn within the outer housing. Three triangular sampling ports are located on the conical tip of the inner tube and aligned with three like ports in the outer housing when the device is in the open position. A one-third rotation of the sampling tube within the housing closes off the sampling ports by a metal-to-metal contact with the solid portion of the cutting tip.

A cap with turning handle is attached to the top of the inner tube to facilitate turning it within the housing.

In use, the tool is adjusted to the closed condition, forced into the soil to the desired depth, opened and rotated to pick up the sample, closed and withdrawn from the soil. The rotating cap and handle are readily removed from the top of the tool and the sample is easily poured out for analysis.

Notes:

1. The tool has been tested in soil sprinkled with zinc oxide. Examination of the sample under ultraviolet light showed a complete absence of fluorescent zinc oxide.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B67-10473

Patent status:

No patent action is contemplated by NASA.

Source: B. C. Wooley and W. W. Kemmerer
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